JAN/88 ZX-Appeal

vancouver sinclair users group

next meeting:

KILLARNY COMMUNITY CENTRE
6260 KILLARNY STREET
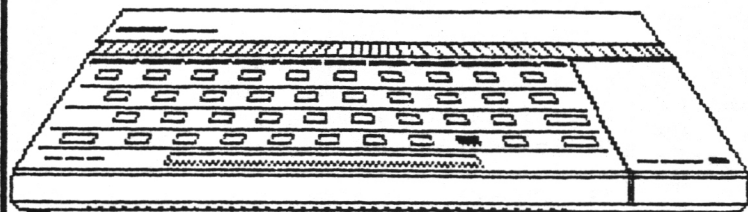VANCOUVER

FRIDAY; 7:00PM

ZXAppeal is a monthly
newsletter put out by the
Vancouver Sinclair Users Group.
For more information on the
group and ZXAppeal see the backcover.

inside

TIMEX sinclair 2068

THIS ISSUE........................

The depths of winter are finally upon us. Christmas and New Years are passed and now its the long uphill pull to Spring. Just the time of year 'real sinclarions' have been waiting for - now we can submerge ourselves in our favourite passtime and no one can give us a hard time (read wives or other 'significant others'). I hope Santa brought you some interesting T/S goodies. If not, a couple of things in this months newsletter might keep you busy for a while. As the last issue ended up mostly articles and listings for the 1000, this issue will be mostly stuff for the 2068. I've been keeping some really good reprints for just such an issue so here they are. Of course no ZXAppeal would be complete without one of Harvey's pearls so we also have a report on his latest forays into QLdom.
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Bimonthly?

....I'm not a magician. I can't make these issues appear like magic each month. I feel to have a newsletter that we can call our own and be proud of requires at least 50% original material. The reprints are a good and necessary way for us to find out what other groups are doing but if they become the major portion of our newsletter what does this say for our enthusiasm. Our newsletter has a first rate reputation within the greateer T/S community and I would not like us to become just another reprint newsletter and lose that reputation. It is becoming apparent that our group is not able, or is unwilling, to produce sufficient original material to sustain a monthly newsletter. I think that enough new material will continue to come forward to support a GOOD bi-monthly newsletter. My view is that a vibrant and energetic newsletter keeps the momentum rolling in a user group. But it's sort of like the chicken and the egg - only an enthusiastic and contributing membership will keep a newsletter, and thusly a group, going. At this stage I propose that the newsletter go to a bi-monthly schedule and I would like to see some positive discussion on this subject at the next meeting.
****

BITS & PIECES

...in the Oct/Nov issue we reported that 2068s were available in a package deal with a 2040 and some carts and cassettes from the Brooklyn Closeout Corp. in Brooklyn, NY for US$130.00. Now we hear that this same outlet is pricing single 2068s at US$85.00. These are NEW units and at this price now is the time to get that backup unit.

...the tickets to the GREAT QL DRAW II are going briskly with many out-of-towners sending their 2 bucks in by mail. If you haven't bought your ticket yet make sure you see Rusty at the meeting.

...anyone seen or spoken to John B. lately? The CCATS(Oregon) group reports that WEYMIL has stopped carrying T/S related wares and is now solely MS-DOS. Maybe this is just another test by the ZEEPER to see how long we can hang in there.
****

If the renewal rate is an indicator of the interest still remaining within our group, we're in great shape.

RENEWING MEMBERS:
Ken Gamey, Gale Winterburn,
Rusty Townsend, Harvey Taylor,
Don Walterman, D.T.Couzens,
Vince Lee, B.G.Watts,
Dave Ross, Ken Grant,
Eric Sakara, Louis Montminy,
Gerd Breunung, Alex Pezarro,
Bill Rutter, Ken Abramson,
N.C.Trylsson, A.Boisvert,
Marie Kendall, Hugh Polley.

IF YOU GET THE DREADED EXPIRY NOTICE BE SURE TO RENEW AT THE MEETING.

...MEETING DATE

JAN /88

SUN	MON	TUE	WED	THU	FRI	SAT
‡	‡	‡	‡	‡	1	2
3	4	5	6	7	**8**	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24/31	25	26	27	28	29	30

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December Minutes

- by your 'umble scribe

The meeting was opened at 19:14 with 21 souls present & a couple straggled in later. Ken had a correction to last month's minutes with appropriate barbs. It seems that actually it was Marcio who had to get the boost. Meanwhile back on the poetic justice front, Ken got rearended, oh intrepid sociological automobile buff who is figuring out what this all means.

We had a visitor Grant Newsham who greatly enjoyed making Ken's jaw drop when he announced that he had a 64.

Ken told us about a couple of items he had received from Fred Nachbaur. One was a Wico Trackball Fred had received from Zebra in the hopes that he would develop some software for it. This has become a donation to the hardware SIG. The trackball and interface were passed around. Also included was a Fourier analysis program for the ZX81 done in Hi-Res.

Ken then told us that the Skytrain tour was booked for Dec 22/87 & there was no more room, to Gerd's dismay.

Karl Brown at VVI is giving another robotics course starting this Jan 18/88. Course fee is $165.00. Don't be late!

At this point Rusty Townsend, our ever practical VP, held a little sale of the items he had won last month. Chung Chow got a 2040 printer on the cheap. Vince Lee got a 16k Rampack. Amazingly at the end of the night, Rusty had scrounged $49.00.

Doing his bit for the Yule tide spirit, Ken at this point broke out the Mandarin oranges and the candies. These made the rounds several times during the rest of the meeting.

Rod Humphreys stood to tell us we have $631.72 in the old credit union with printing costs to be subtracted & miscellaneous credits yet to be added. To his great surprise, Rod has received 3 member profiles. Rod mentioned that the fanatics at Quantum Computing have developed a 68020 board for the QL. Also starting in November, the monthly minutes will be posted on CityLink [604-222-2000 (Room 6001, Board 12)]. Y'all call in, now, ya hear! Chung Chow mentioned at this point that he ran across a place in Seattle selling dead 2068's for $10.00 - he picked up two.

Harry "two dollar special" Slot stood to tell us the hardware group is still meeting. It seems that at the last meeting, a certain black box with 2 dials, from Rois Harder's sale disappeared. After a bit of group mulling, it turned out that the item had been sold twice. Gerd & Vince are working it out.

It was mentioned that the 32K NVM workshop with Wilf was off. Instead Wilf is making a DIY board for the club available.

Ian the librarian stood to tell us things were fine with the library & keep those goodies a comin. During the library discussion it became evident the consensus was that a 6 to 1 copying booster was not needed. There was a protracted discussion about the pro & con of QSave & SDS, tape dropouts & tape types.

Harvey had brought some QL information & mentioned that Steve

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Ciarcia from Byte is starting a hardware specific newsletter. He donated 3 copies of Modern Electronics to the library & told the group about his subscription problems with them.

Eric Sakara stood to tell the group about an amazing article he had seen in Whole Earth Review #54 (??). Some guy in the states had 4 computers on his greatly modified bicycle. Including such items as 8 keys on each handle bar so he can type as he rides!

Ken, el Supremo, at this point raised the point that in the past we had had a presentation at each meeting & wondered if we wished to continue doing so. It was the general consensus that the group did so desire. Ken then raised the question of what presentations we would like to see. He mentioned that Wilf Rigter had given presentations in the past & that Harvey had agreed to do a Telecomm talk. If you have any suggestions, let Ken know.

At this point Harvey was allowed to make a fool of himself explaining how Full Duplex modem communication was just like two people talking on the phone at the same time - if one is breathing a Helium based atmosphere & the other an Argon based. There was much talk of stop bits & parity & such ; then the meeting dissolved to general mayhem & madness.

>eof

PLAYING WITH ELECTRICITY

–Dec 29/87
–Harvey Taylor

In May/June/87 Byte magazine, Steve Ciarcia described a video digitizer project. After a good deal of hesitation, I decided to go with this system on my QL. The deciding factor in my mind was that I could use this system with any computer with a serial port. The digitizer itself is well described in those articles so I will only discuss the software I have written to drive the board.

Getting the Circuit Cellar Inc. digitizer to use with the QL meant that I had to write a software driver to control the board & display the information received. To begin at the beginning, this turns out to be another case where one runs afoul of the cheap SERial ports on the QL. Specifically, the board transmits data at the North American norm of 8 data bits, no parity, 1 stop bit. The problem which arises is that at high speed (read 9600 baud), the QL wants at least 1 1/2 stop bits. This means that until I am able to modify the initialization sequence of the CCI board to use 2 stop bits, I must transfer data from the CCI board to the QL at a mere 2400 baud. One video field is digitized to 62464 bytes. At 2400 baud, it takes about 4 or 5 minutes to transmit the whole field. It only seems like forever.

The CCI board digitizes to 6 bits [0-63], while the QL displays at most 3 bits [0-7]. One of the first requirements then, was to define a method of Mapping the 0-63 CCI range into the QL 0-7 range. I wrote a function which takes either preset values (Linear, Square & Exponential) or User defined values and uses them as Limits to define the Mapping process. The colours which are used can be simply 0-7 or set up any way one wishes.

Once you have the information in the computer, it is useful to be able to analyze it. One of the primary methods which is used in the Image Processing world is with a special graph called a Histogram. This is a plotting of Pixel values [0-63 in this case] versus number of pixels. A quick look at this graph will tell you where the values of your screen are bunched.

The fun starts when once you have the information in the computer you can begin to modify it. There are a variety of mathematical filters described in the literature. (See the bibiography below.) Among these are Low & High Pass, Laplace edge enhancement and median value filters. One might also wish to spread the Histogram out so that the full range of shades is used. This might look like a similar operation to choosing a narrow mapping, however once you have modified the data you can apply the other filters to the data in a way

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which only changing the mapping does not allow.

In all of these processes it is all too easy to generate garbage. One must try different techniques to see comes out. If the Black/White settings on the CCI board are set too closely together, it is difficult to do much of anything with the narrow range of values produced.

The Median value filter would be used primarily to remove the effects of noise in the video info; see Picture #1. The Low Pass filter tends to smooth out values; see Picture #2. With a combination of different filters one can seperate prominent features in an image; see Picture #3 which uses a Low Pass, Median and then a Laplace Edge Enhancement filter. All of these pictures are derived from the same Picture#0 data set.

Bibliography:

Steve Ciarcia - Byte Magazine, May/
          June/87
Gerry Kane - The CRT Controller
          Handbook, Osborne 1980
Image Processing - Byte Mag Theme
          March/87
Gregory Baxes - Digital Image
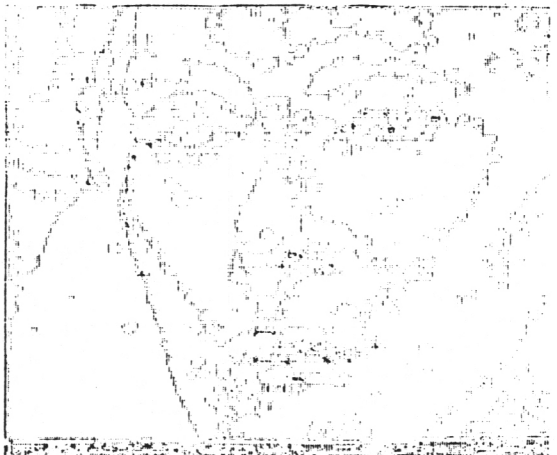   Processing, Prentice-Hall 1984

PICTURE #0, The Original

PICTURE #1, Median Filter

PICTURE #2, Low Pass Filter

PICTURE #3, Low Pass, Median & Edge Enhancement

GETTING THE RIGHT PROPORTIONS
-Wes Brzozowski, SINCUS

Before reading too far into this, go grab a newspaper or some other publication that has print laid out in narrow columns. Count the number of letters and blank spaces on several lines. Chances are, you'll find that each line contains a DIFFERENT number of characters.

This is done with a method called Proportional Printing. It turns out that fat characters like M take take up a whole lot more space than the tiny letter i, so each character is given only as much room as it needs. Not only is this much more pleasing to the eye, it allows a surprising amount of extra text to be squeezed into the same amount of space.

Our TS2068s normally display 32 or 64 (and now 85) columns of text, with each character taking up the same width, no matter what its size. It seems that we should be able to improve this somewhat.

Actually, the job has already been done for us. In the Nov. 1985 issue of *YOUR SPECTRUM*, in the article "All Out of Proportion", such a program is given. Unfortunately, it does have a number of defficiences. I've corrected as many of these as are practical (though thay can still be annoying at times) and presented it here for your use. Note that the Spectrum program and my perversion of it here are radically different in many ways. If you've got the old version, you'll still have to completely retype it for the TS2068. Still, they do function somewhat alike, and you might find the text of that article to be helpful.

For those who have that original article, the main differences are: 1) the code is modified to run on a TS2068, 2) machine code is initially entered through DATA statements, eliminating the need for a hex loader, 3) the character fonts are MUCH improved, and you don't have to type in the pixel patterns for each, because my program derives the patterns from the Timex patterns, already in ROM, 4) the code works as in OVER 0, rather than OVER 1, so if you print over a space that already contains text, you won't get such an awful mess, and 5) the TAB function is also implemented in the proportional mode.

This article contains two programs; type in and RUN the first one. After a long wait, it will SAVE the true proportional printing program to tape. When you reload that one (no waiting required, from here on) you'll be ready to begin.

It starts out with a little demonstration of proportional printing. This redefines the LPRINT command, so it will conflict with your use of a printer. I haven't found this to be any bother in the types of programs I've used it in. Still, if there's sufficient interest, it shouldn't be too hard to produce an add-on program that inserts a "proportional print" channel, and attaches it to an unused stream. This could allow your normal printer to work (in its normal mode) in conjection with proportional printing on the screen. In the mean time, if your printer supports a COPY function, that should work with this program, as is.

In any case, LPRINT now prints to the screen in proportional mode, and PRINT continues to work like it always does, so you can mix BOTH methods in your program at once. However, both maintain their own separate screen locations, so you can easily print to different parts of the screen with each.

For proportional screen positioning, you can use LPRINT AT and LPRINT TAB commands. However, note that the old AT and TAB

functions use screen positions that assume all characters are 8 pixels wide. This would never do for proportional printing, so when you use AT or TAB with LPRINT, you specify the X and Y locations in PIXELS, not in characters. This means you can place your characters anywhere you want on the screen, right down to the pixel level. The BASIC program, from lines 3030 on give a reasonable demonstration of how it works.

The *YOUR SPECTRUM* article also included a font designer program, which is included here, but this is optional. To move the cursor, use the Q, A, O, and P keys. Use M and N to turn a pixel on or off. F keeps the design, D displays a character, U displays the entire character set and S and J save and load the character set. LOAD in a SAVEd character set to the main program with LOAD "" CODE 64208. Once loaded into the proportional print program, you can save the program and fonts together, and never bother with the fonts again.

The proportional printing fonts require one new thing we never worried about before; you have to specify how many pixel wide your character is. To do this, you design your character to touch the right most border of the 8 x 8 character block you're given. Then, in the top row of pixels, you set each pixel that's in a valid column for that character. Thus, if your character is to be five pixels wide, simply set the right most 5 pixels in the top row (those won't be printed on the screen, don't worry). Don't forget to include one or more pixels for the spacing between characters! In the "standard" character set, I've chosen to have only one pixel width of space between characters, and a "blank space" character is 4 pixels wide. This works fairly nicely, but you can change it to suit your needs.

A small sample of proportional printing is included here. Won't that look nice in your next program?

NOTES from Editor: *A big thanks to Wes, with all Wes does, and it is a lot folks, Wes finds time to do projects for us, Time Designs, answer a lota mail, write programs, find time for family and of course his employer. ALL of the TS family benefits from the generosity of Wes and all the others who contribute their valuable time and talents to their user group and newsletters and BBSs. If you like being on the receiving end of the efforts of others, and do not contribute time, talent or sweat to the efforts of a user group, newsletter or BBS, there will soon be fewer or no sources of information. Several UGs and many BBSs have quit over the past year, several newsletters have reduce their number of issues and no replacements are in sight. Wake up folks, smell the coffee, and lend a hand before it is too late.*
The proportional printing program will be Uploaded to BUBBS under name of WESPPP.BAS. The font program may be uploaded at a later date. Data on BUBBS:(607)693-3359-7 days-24hours a day- 300 baud on from 5pm to 9am weekdays, 24 hours weekends-free.

On pages 7 thru 10 of this issue, as in earlier issues, we are running a printout of the TS2068 ROM disassembly by Wes Brzozowski. We are running extra copies of each page of the ROM Disassembly that we may offer members at the conculsion of the printout a complete set. With this issue we have nine sheets or 18 pages of printout. Our extra copy run is set at 50, it will be made available on a first come first serve basis with a minimial donation requested to cover postage.

```
10 REM Program to perform Prop
ortional Printing.
15 REM An upgraded version of
an entry in "YOUR SPECTRUM", Nov
1985
20 REM Changes include - Modif
ied for TS2068, Supports TAB, be
tter fonts, and works as in OVER
0, instead of OVER 1
25 REM When you RUN this progr
am, it will SAVE the actual Prop
ortional Print program to tape
30 REM When THAT program is ru
n, all LPRINT statements will do
proportional printing to the sc
reen.
40 REM AT and TAB are supporte
d, but they now refer to pixel p
ositions, instead of character p
ositions.
50 REM It will also be possibl
e to use PRINT, to do non-propor
tional printing on the screen.
60 GO TO 585
70 REM Subroutine to decode th
e following Hexadecimal DATA sta
tements
75 READ n$: LET hi=CODE n$(1):
LET lo=CODE n$(2)
80 IF hi>57 THEN LET hi=hi-7
85 IF lo>57 THEN LET lo=lo-7
90 LET n=16*hi+lo-816
95 RETURN
100 DATA "21","00","A8","22","E
9","FE","2A","4F"
110 DATA "5C","01","0F","00","0
9","01","DE","FD"
120 DATA "71","23","70","C9","E
5","C5","D5","F5"
130 DATA "CD","EA","FD","F1","D
1","C1","E1","C9"
140 DATA "F5","3A","F0","FE","F
E","00","20","15"
150 DATA "F1","FE","16","20","0
6","3E","FF","32"
160 DATA "F0","FE","C9","FE","1
7","20","38","3E"
170 DATA "FD","32","F0","FE","C
9","F1","FF","20"
180 DATA "09","F1","32","E9","F
E","21","F0","FE"
190 DATA "35","C9","FE","FE","2
0","0D","F1","47"
200 DATA "3E","A8","90","32","E
A","FE","AF","32"
210 DATA "F0","FE","C9","FE","F
D","20","0A","F1"
220 DATA "32","E9","FE","3E","F
C","32","F0","FE"
230 DATA "C9","F1","AF","32","F
0","FE","C9","FE"
240 DATA "0D","20","09","CD","2
A","FF","3E","02"
250 DATA "CD","30","12","C9","F
E","20","38","04"
260 DATA "FE","80","38","02","3
E","3F","26","00"
270 DATA "6F","29","29","29","E
B","2A","F1","FE"
280 DATA "19","7E","32","F1","F
E","36","00","22"
290 DATA "F2","FE","01","07","0
0","09","22","EE"
300 DATA "FE","3A","EA","FE","F
E","39","D2","0A"
310 DATA "FF","CD","13","FF","E
D","4B","E9","FE"
320 DATA "CD","03","26","32","E
D","FE","22","EB"
330 DATA "FE","06","08","C5","2
A","FE","7E"
340 DATA "2B","22","EE","FE","6
F","3A","F1","FE"
350 DATA "16","FF","5F","4F","3
A","ED","FE","FE"
360 DATA "00","28","12","47","2
5","00","CB","3D"
370 DATA "CB","1C","CB","3B","C
B","FB","CB","1A"
380 DATA "A7","10","F3","42","4
B","ED","5B","EB"
390 DATA "FE","1A","A1","B5","1
2","CD","37","FF"
400 DATA "3A","ED","FE","FE","0
0","28","09","13"
410 DATA "1A","A0","B4","12","C
D","37","FF","1B"
420 DATA "2A","EB","FE","CD","F
7","FE","22","EB"
430 DATA "FE","C1","10","AF","3
A","F1","FE","2A"
440 DATA "F2","FE","77","3A","E
9","FE","47","3A"
450 DATA "F6","FE","80","32","E
9","FE","C9","00"
460 DATA "A8","00","00","00","0
0","00","00","00"
470 DATA "00","00","C8","F9","0
0","F5","7C","25"
480 DATA "E6","07","20","0A","7
D","D6","20","6F"
490 DATA "38","04","7C","C6","0
8","67","F1","C9"
500 DATA "3A","F1","FE","2A","F
2","FE","77","CF"
510 DATA "04","06","08","3A","F
1","FE","4F","A7"
520 DATA "CB","39","30","03","0
5","18","F8","78"
530 DATA "32","F6","FE","3A","E
9","FE","80","D0"
540 DATA "AF","32","E9","FE","3
A","EA","FE","D6"
550 DATA "08","32","EA","FE","C
9","E5","F5","7A"
560 DATA "CB","0F","CB","0F","C
B","0F","E6","03"
570 DATA "F6","58","67","6B","3
A","8D","5C","77"
580 DATA "F1","E1","C9"
585 CLEAR 64199: PRINT AT 10,0;
"This Will Take a While...": PRI
NT "   ...Why not take a break?"
590 REM *******************
610 FOR j=64970 TO 65356: GO SU
B 70: POKE j,n: NEXT j
700 REM *******************
710 REM Now that the machine co
de is in, we'll derive the compr
essed fonts from the standard Ti
mex character set
1000 LET addr=PEEK 23606+256*PEE
K 23607+256*8: LET daddr=64208
1010 FOR c=1 TO 95
1020 LET smin=16
1030 FOR x=1 TO 8
1040 LET l=PEEK addr: LET addr=a
ddr+1
1050 IF l<16 THEN LET s=16: GO T
O 1090
1060 IF l<32 THEN LET s=8: GO TO
1090
1070 IF l<64 THEN LET s=4: GO TO
1090
1075 IF l<128 THEN LET s=2: GO T
O 1090
1080 LET s=1
1090 IF s<smin THEN LET smin=s
1100 NEXT x
1110 LET addr=addr-8
1120 FOR x=1 TO 8
1130 POKE daddr,(PEEK addr)+smin
1140 LET addr=addr+1: LET daddr=
daddr+1
1150 NEXT x

1160 LET smin=8: LET daddr=daddr
-8
1170 FOR x=1 TO 8
1180 LET r=PEEK daddr:
LET daddr=daddr+1: IF r=0 THEN G
O TO 1220
1190 IF ABS (r/2-INT (r/2))>.1 T
HEN GO TO 1210
1200 LET s=s+1: LET r=INT (r/2+.
1): GO TO 1190
1210 IF s<smin THEN LET smin=s
1220 NEXT x
1225 IF smin=0 THEN LET smin=1
1226 LET q=2↑(smin-1)-1: IF smin
=1 THEN LET q=0
1230 POKE daddr-8,q
1240 NEXT c
1250 POKE 64200,15
1260 FOR j=64201 TO 64207: POKE
j,0: NEXT j
```

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```
2000 BEEP .25,1: BEEP .25,15: BE
EP .25,1: BEEP .25,15
2010 SAVE CHR$ 253+CHR$ 245+CHR$
   8+"ING"+CHR$ 235+"YOU" LINE 300
0
2020 SAVE CHR$ 232+CHR$ 204+CHR$
   227+"THE _"+CHR$ 175 CODE 64200,
1160
2025 RANDOMIZE USR 64970
2030 GO SUB 8000
2040 STOP
3000 CLEAR 64199: LOAD ""CODE
3010 RANDOMIZE USR 64970
3020 GO SUB 8000
3030 LPRINT
3040 LPRINT "You can now NEW the
   BASIC portion away;"
3050 LPRINT "This will Turn Off
the proportional printing..."
3060 LPRINT "But you can turn it
   on again, with"
3070 LPRINT TAB 60;"RANDOMIZE US
R 64970"
3080 STOP
8000 CLS : PRINT "This is an exa
mple of the boringold printing.
What else could wewant?"
8010 LPRINT AT 0,50;"Well, we CO
ULD wish for proportional printi
ng;"
8020 LPRINT "Look how neat it is
, and how easy it is to read!"
8030 LPRINT "...Then, count how
many additional characters  we
can get on a line."
8040 LPRINT
8050 LPRINT "REMEMBER...these ch
aracters are the SAME      SIZE
as the standard Timex character
set. Onlythe spacing between the
m has been changed!!!"
8060 RETURN


This is an example of the boring
old printing. What else could we
want?


Well, we COULD wish for proportional printing;
Look how neat it is, and how easy it is to read!
—Then, count how many additional characters
we can get on a line.

REMEMBER—these characters are the SAME
SIZE as the standard Timex character set. Only
the spacing between them has been changed!!!


        Optional Font Designer Program


  10 CLEAR 39999
  20 LET ba=40000
 100 PRINT AT 2,3; "▓▓ ▓▓ ▓▓ ▓&▓."
 110 FOR f=3 TO 10: PRINT AT f,3
;"▓00000000▓": NEXT f
 120 PRINT AT 11,3; "▓▓▓▓▓▓▓▓▓▓"
 130 LET a=0: LET b=0
 200 OVER 1: PRINT AT a+3,b+4;"▓
": PAUSE 2: PRINT AT a+3,b+4;"▓
: PAUSE 2: OVER 0
 210 LET a=a+(INKEY$="a" AND a<7
)-(INKEY$="q" AND a>0)
 220 LET b=b+(INKEY$="p" AND b<7
)-(INKEY$="o" AND b>0)
 230 IF INKEY$="m" THEN PRINT AT
a+3,b+4; INVERSE 1;"X": PLOT b+
160,(8-a)+151
 240 IF INKEY$="n" THEN PRINT AT
a+3,b+4;"0": PLOT INVERSE 1;b+1
60,(8-a)+151
 250 IF INKEY$="f" THEN GO TO 30
0
 260 IF INKEY$="d" THEN GO TO 40
0
 270 IF INKEY$="u" THEN GO TO 50
0
 275 IF INKEY$="s" THEN GO TO 10
00
 280 IF INKEY$="j" THEN GO TO 10
20
 290 GO TO 200
```

```
 300 INPUT "Which Character? ";c
$
 310 IF LEN c$<>1 THEN GO TO 300
 320 IF CODE c$<32 OR CODE c$>12
7 THEN GO TO 300
 330 LET c=CODE c$
 340 FOR f=0 TO 7
 350 POKE (c-32)±8+f+ba,PEEK (16
468+(f±256)): NEXT f: RUN
 400 INPUT "Which Character? ";c
$
 410 IF LEN c$<>1 THEN GO TO 400
 420 IF CODE c$<32 OR CODE c$>12
7 THEN GO TO 400
 430 POKE 23606,64: POKE 23607,1
55: PRINT AT 2,20;c$: POKE 23606
,0: POKE 23607,60
 440 FOR a=0 TO 7: FOR b=0 TO 7
 450 IF POINT (b+160,(8-a)+151)=
1 THEN PRINT AT a+3,b+4; INVERSE
1;"X": GO TO 470
 460 PRINT AT a+3,b+4;"0"
 470 NEXT b: NEXT a
 480 LET a=0: LET b=0: GO TO 200
 500 PRINT AT 15,0;: FOR f=32 TO
127: PRINT BRIGHT 1;CHR$ f;" ";
: NEXT f
 501 PRINT AT 15,0;" ";: OVER 1:
FOR f=32 TO 127: POKE 23606,64:
POKE 23607,155: PRINT BRIGHT 1;
CHR$ f;: POKE 23606,0: POKE 2360
7,60: PRINT " ";: NEXT f: OVER 0
: POKE 23606,0: POKE 23607,60
 510 BEEP .1,1: PAUSE 0: PAUSE 0
: RUN
1000 INPUT "File Name? ";f$: SAV
E f$CODE 40000,768: RUN
1020 INPUT "File Name? ";f$: LOA
D f$CODE 40000,768: RUN
```

9

RS232 PORT ADDED TO TIMEX 2050 MODEM CARD
Construction

To add the RS232 Port to the 2050 Modem Card requires the addition of two IC's, a four pole double throw switch and a 9 volt battery. Component mounting is not critical and I found that all parts can be mounted on a small PC board and piggy-backed on the top of the modem card. Select an area of the card where there are no modem components and drill two small holes using care not to cut any circuit traces on the board. A large enough area exists next to the 8251 (U2), this is where I mounted the piggy-back board. Next, using an Exacto-Knife, cut the copper circuits at the 8251 (U2) at pin 3 (RXD), pin 17 (CTS) and pin 22 (DSR). These are the three input lines to the 8251. Using a very fine point soldering iron, solder wires directly to the pins on the 8251 where the cuts were made. The other end of the wires are connected to the operating points of the four pole double throw switch as indicated in the wiring diagram. One side of the switch is then wired to the pins 1,4 and 11 on U8 and the other side is connected to the MC1489 RS232 line receiver. Next solder wires in the same manner to pins 19, 23 and 24 of the 8251 (U2). Connect the other end of the wires to the MC1488 RS232 line driver as shown in the diagram. The 8251 output signals are not switched and go the RS232 driver and modem. Add wires to the voltage points, I picked up the +5 volts at jumper W2 and +9 volts at the + side of C19. The ground connection can come from any of the large plated areas on the board. Finally, add the RS232 cable or connector. I used a 25 pin D-connector and the standard RS232 configuration. This will allow connection to a wide variety of devices such as external modems or serial interfaces on printers. Carefully check all connections for solder bridges or wire shorts.

Circuit Description

The MC1488 Driver and MC1489 Receiver provide a conversion from RS232 voltage levels (+15 to -15) to TTL levels (0 to +5). THree input and three output lines are connected to the 8251, four are control signals and two are data. To provide the minus RS232 level, a 9 volt battery is used. This will eliminate the necessity of an added power supply. The MC1489 line receiver requires a +5 volt source. This is connected to the modem card but the +5 volts is supplied by the Timex/Sinclair 2068 or T/S1000.

Checkout

The RS232 Port can be tested using a cable wrap method. At the RS232 connector, jumper RXD to TXD ,RTS to CTS and DTR to DSR. Load and run Mterm Smart II. Do a manual connect operation. The CONNECT prompt should appear. Then type characters in the FULL DUPLEX mode and the characters should echo to the screen as in half duplex mode only now the data is actually being transmitted and then received by the 8251. If all of these indications are observed then you are ready to connect to an RS232 device.
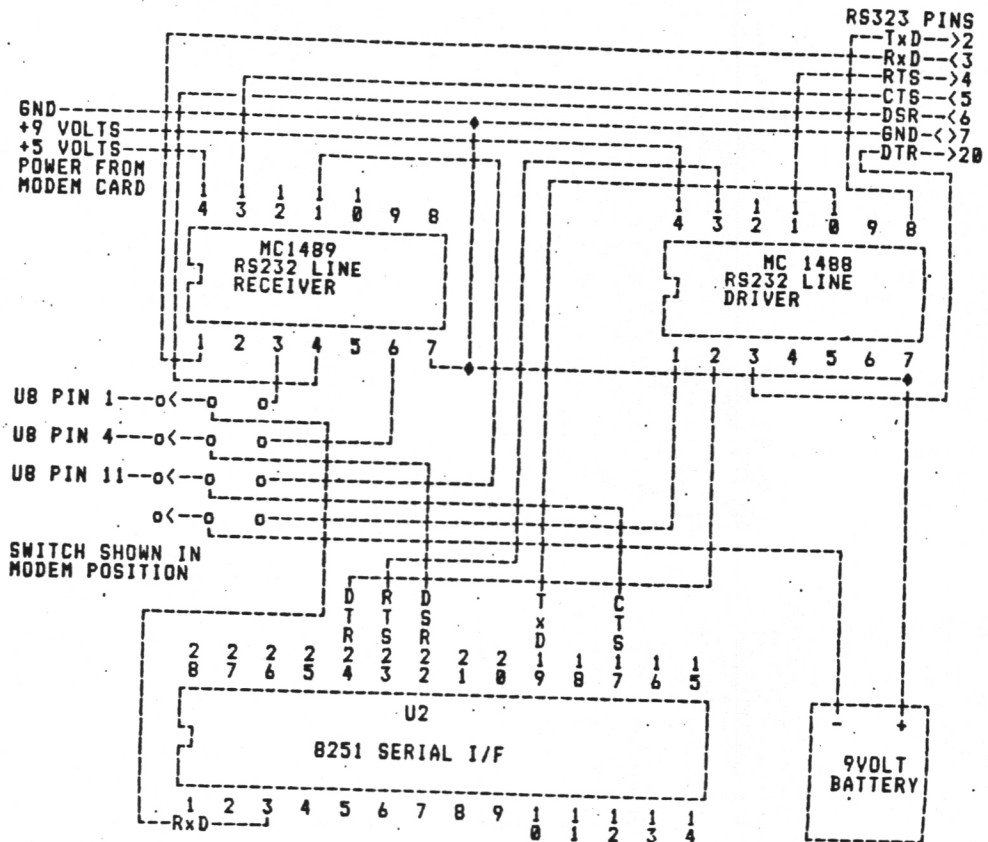
Operation

When using the RS232 Port, some of the modem circuits are left connected, therefore it is recommended that the phone cord be disconnected from the modem to prevent disruption of phone service. The 8251 must be initialized with software. When Mterm Smart II is started, the mode and control characters are sent to the 8251. The software then checks the conditions of the 8251 to see if the proper handshaking signals are present. The CTS line must be active for the for the 8251 to transmit data. This is an internal operation of the 8251 and cannot be bypassed. If your RS232 device is not capable of activating the CTS signal then jumper the RTS to CTS at the RS232 connector. The software will also check the state of the DSR line, if your serial device does not support this line then jumper DTR to DSR. Both software and device must be set at the same baud rate and communication parameters, such as 8 data bits, 1 stop bit and no parity.

Computer to computer communications

To use the RS232 to communicate directly with another computer bypassing modems, the RXD and TXD lines must be swapped at one end of the cable. This will make the TXD at computer A become the RXD at computer B and the RXD at computer A become TXD at computer B. Both computers must be set at the same baud rate and communication parameters.

RS232 PORT ADDED TO TIMEX 2050 MODEM CARD

Dave Schoenwetter
SINCUS

NOTES ON OPERATION
WHEN NOT IN USE, S1 SHOULD BE SET TO MODEM TO PREVENT BATTERY DRAIN.
DICNONNECT PHONE LINE WHEN USING RS232 PORT.
DISCONNECT RS232 CABLE WHEN USING MODEM.

RS323 PINS
TxD-->2
RxD-<3
RTS-->4
CTS-<5
DSR-<6
GND-<>7
DTR-->20

GND
+9 VOLTS
+5 VOLTS
POWER FROM
MODEM CARD

MC1489
RS232 LINE
RECEIVER

MC 1488
RS232 LINE
DRIVER

U8 PIN 1
U8 PIN 4
U8 PIN 11

SWITCH SHOWN IN
MODEM POSITION

U2
8251 SERIAL I/F

RxD

9VOLT
BATTERY

C.A.T.U.G.
NITE-TIMES NEWS

ADDING A TTL MONITOR TO YOUR TS-2068
By Gary Lessenberry

Have you ever tried to work in 64 column mode with a color television? Although your color TV is fine for 32 column text and games, it can be a visual nightmare with 64 column text. Like many of us, I was hesitant to spend $200+ for an RGB monitor and a composite monitor just wasn't quite clear enough to make it worthwhile. The solution was one of the many monochrome TTL monitors that can be found in the Computer Shopper each month for $20 or so. Several of us ordered Panasonic Model K-904B1 displays from BG Micro. These are brand new units that come with a service manual. The monitors were uncased and without a power supply. Building a rectangular wooden box to set the chasis in was easy. However, the power supply was a little more difficult. It required a 12 VDC, 1 Amp power supply which can be expensive when purchased over the counter. I found a power supply from Jameco Electronics (Part #PS72559) that sold for $14.95 and provides a single power source for my monitor. TS-2068, Disk Drives (2), TS-2050 and VICO Trackball. I will explain how to interface this power supply in an article in our May issue.

TTL monitor interfaces are not available on the TS market. Our TTL interface is actually a a modification of the John Oliger RGB interface. The pins of you TS-2068 edge card that are used for this are:

B4 (+5VDC)   B27 (Red)
B28 (Green)   ; B29 (Blue)
B31 (Video)   B32 (Ground)

Side B of the 2068 motherboard is the non-component side. There are two steps to this project: modifying the 2068 and building the TTL interface.
Parts for this project include:
74HC00 Quad AND Gate IC (U2)
7432 Quad OR Gate IC (U1)
47K ohm, 1/8 watt resistor (R2)
1K ohm variable resistor (R1)
32 pin edge connector
ribbon cable
perferated board
wire wrap wire
soldering iron & solder
exacto knife (to cut trace)

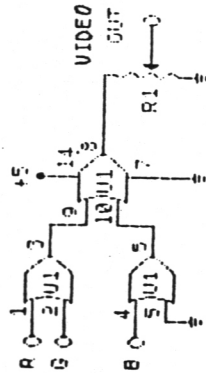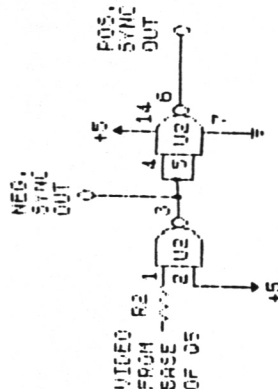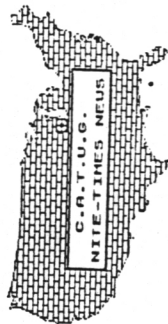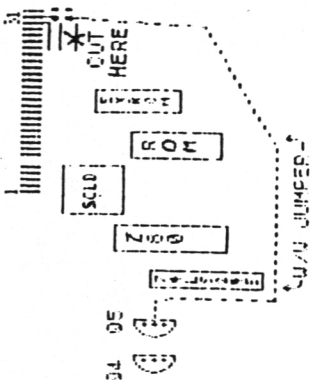The modification to the 2068 is an easy one (see fig 3), cut the trace that terminates immediately behind edge slot A31 on the top (component side) of the motherboard. Solder a jumper (using wire wrap wire) from the center leg of Q5 to the solder dot at the right of the severed trace. This allows the DC clamped b/w composite video at the base of Q5 to be delivered to the edge connector pin B31.

On your perferated board, you will construct the two interface circuits shown in figures 1 & 2. To OR gate the RGB signals into a compatible video signal (fig 1), construct the following: B27 (RED) to U1/1, B28 (GREEN) to U1/2, B29 (BLUE) to U1/4, B32 (GROUND) to U1/5 & U1/7, B4 (+5vdc) to U1/14, U1/3 to U1/9, U1/6 to U1/10, U1/8 to R1, B32 (GROUND) to R2. The second circuit on the perferated card (fig 2) will provide the horizontal and vertical syncs. Construct the following: B31 (VIDEO) to R2, R2 to U2/1, B4 (+5vdc) to U2/2 & U2/14, U2/3 to U2/4 & U2/5, B32 (GROUND) to U2/7. The outputs from this interface will go to the following: U2/6 (positive sync input) to the vert sync and horiz sync on monitor, R1 wiper (video input) to the video input on monitor.

This monitor will provide you with the cleanest, clearest high resolution text of any monitor available for the TS-2068. However, be advised that since the colors are all gated together, you will display only color or black. If you are using a program that that has the ink, boarder and paper at colors other than black, your screen will be solid green without any distinguishing features! The best combination of boarder, paper and ink are boarder 0, paper and ink 7.

TO U5
3/4 JUMPER

FIGURE 2

FIGURE 1

TS2068 Colour Printouts

by Jeff Taylor

Almost every user has, at one time or another, wished he could capture his work in colour. However, most colour printer prices would deter the average home enthusiast. Now, thanks to an ingenious new interface, colour printouts of both text and pictures can be had for an affordable cost.

John McMichael, of Laramie, Wyoming, has built an interface to mate a TS2068 to a Commodore VIC-1520 plotter/printer. Now before you start grumbling about using the 'competition' remember that any full-size printer you use is also the 'competition'. Keep an open mind.

The 1520 is a four colour (black,blue, green,red) plotter which draws on a standard 4.5 inch wide roll of calculator paper. While it won't do single points, it is capable of a single step to a resolution of 0.2mm (can you see the difference?). The 1520 has 4 character sizes (10,20,40 & 80 columns per line),16 dash sizes, 90 degree character rotation and upper and lower case character set which matches all of the TS2068's when used with the interface.

Mr. McMichael's interface is a very neat and professional looking printed circuit board containing just four IC's and one capacitor. As received,the board has a keyed edge connector to fit in the rear bus of the TS2068, a 6-pin plug on a 4-conductor cable to connect the plotter and such useful details as onboard strain relief for the cable and even a plastic foot to prevent strain on the edge connector.

He has also produced 2 software tapes. The first is a driver/demo which in demo mode will show the capabilities of the plotter and in driver mode can be used to build your own plotter programs. The second is a Screen to Plotter utility program which allows you to either draw a freehand sketch on tv screen (keyboard or joystick) which the plotter matches move for move or you load an existing SCREEN$ picture of your own and trace it on tv screen, the plotter following each movement.
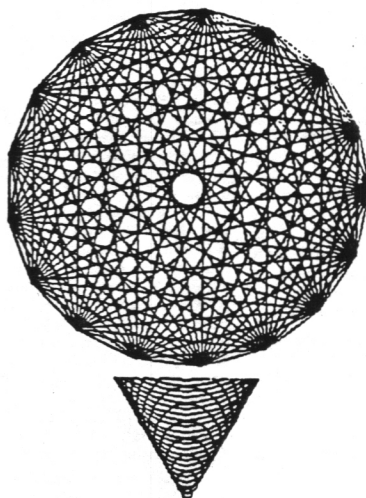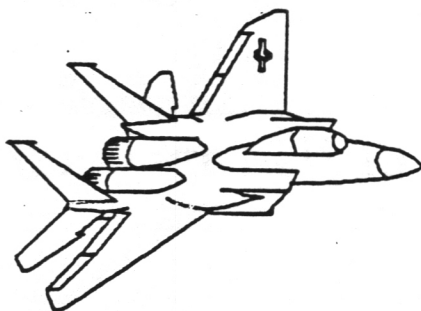
Prices for the interface range from $14.95US for the bare board and driver/ demo tape,$20.95US for the kit of board, parts and tape to $35.90US for the assembled and tested unit with optional edge connector and the demo tape. The utility tape is an additional $8.95.

The printer/plotter, like the TS2068, is an 'orphan' in that it was discontinued by Big C. It is still available here in Toronto at most Woolco stores (haggle the price down, they are happy to move them) and was reported at Active Surplus Annex at @$50.00. Commodore will service the machine and parts, paper and pens can be purchased from them, so you know support is still around.

For more information contact: Mr. John McMichael, 1710 Palmer Drive, Laramie, Wyoming, USA, 82070. Send SAE and MO..

I highly recommend this interface/ plotter combination to those enthusiasts who seek colour printouts and plots at an affordable price.

This review and these demo plots were all produced by a TS2068 on a VIC-1520 plotter/printer & a McMichael interface.

13

Amstrad compatibles – now available in Canada.

The British are here!

by Cathy Hilborn

TORONTO – Corporate Canada's IBM compatible PC choices expanded again when Amstrad International, reportedly Europe's largest computer supplier, launched its XT-alternative PC1640 here last month.

Distributed in Canada through AudioVisual Specialists (AVS) of Montreal, Amstrad's PC1640 is based on an 8 MHz 8086 with 640KB RAM. Its VLSI chips are proprietary. Its BIOS was developed by Amstrad.

Standard features include an adapter supporting MDA, CGA or EGA displays, a two-button mouse with dedictated port, a connector for a lightpen or joystick and loudspeaker with volume control. The standard configuration also includes three full-size expansion slots, a serial port, a parallel port and a clock/calendar.

Bundled software includes Digital Research Inc.'s GEM (Graphics Environment Manager), GEM Desktop, GEM Paint, GEM-based Locomotive Basic 2, and Microsoft-compatible MOUSE.COM.

Suggested list price for the whole kit and kaboodle, configured with single floppy and monochrome display, is $1,499. The top-of-the-line 20MB hard drive and enhanced color monitor, lists at $3,099.

Other Amstrad offerings available from AVS include: 10-inch or 15-inch 9-pin printers and 10-inch, 24-pin model.

Some 77 dealers representing more than 100 retail outlets across the country have already signed up to market these offerings.

AVS offers a one year parts and labor warranty on the Amstrad products. AVS, founded eight years ago, now employs 85 people and boasts a 40,000 square foot head office facility in Montreal. Ten sales offices stretching from Moncton, N.B. to Penticton, B.C. supply products to dealers across the country.

International Data Corp.'s research indicating Amstrad holds 32 per cent of the United Kingdom's PC market – ahead of IBM which holds only 25 per cent.

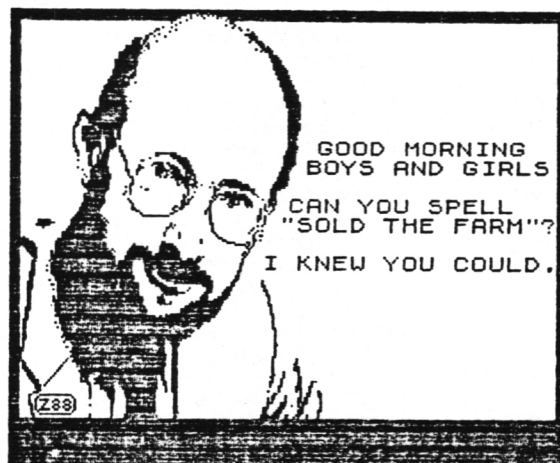Last year, Amstrad sold some 1.72 million PCs and wordprocessors worldwide, recording sales of over US$500 million. □

TIMEX/SINCLAIR SALES DROP

▶ Sales of the Timex 1000 (né Sinclair ZX81), once the most popular home computer, have plunged. Orders for its new 1500 and 2000 models are far less than projected. Timex, which pioneered the super-cheap home computer and led in the pricing battles, sold 550,000 units in its first five months. Sinclair had sold 150,000 ZX81s before turning distribution over to Timex. So far, well over a million units have been manufactured.

The 1000 has sold for as low as $27.95, and typically sells for about $45. The Commodore VIC-20, TI-99/4A, and Atari 400, which sell for only $30 to $40 more, offer color, more memory, better keyboards, and more features. As a result, they've hurt sales of the 1000, and many retailers have abandoned the unit. Even the Timex 1500, which generally sells for about $80, does not stack up well against these units. And the model 2000 is facing stiff competition from the somewhat higher-priced Commodore 64, which has better keyboards, graphics, and sound.

Timex has therefore begun selling its systems to mail order companies and to companies that will package the unit with encyclopedias and textbooks. Also, the units are being offered by banks and real-estate developers as give-aways in sales promotion programs.

In England, Sinclair has unveiled a continuous-loop tape drive interface for its Spectrum color computer. It has an 85K capacity and an average access time of 3.5 seconds, and sells for $76, plus $7.50 for a tape cartridge. The unit is expected to be introduced in the U.S. for the Timex 2000 systems. The drive requires a $50 interface unit (only $30 when purchased with drive). The unit that is needed, which fits under the computer, also provides an RS-232 port and local-area network connection device.

GOOD MORNING BOYS AND GIRLS CAN YOU SPELL "SOLD THE FARM"? I KNEW YOU COULD.

14

```
  10 PRINT AT 10,10;"Charts"
  20 PAUSE 50
  30 CLS
  40 INPUT "How many items of da
ta ";n
  50 DIM d(n)
  60 DIM a(n)
  70 FOR a=1 TO n
  80 INPUT ("Data item ";a;" ");
d(a)
  90 NEXT a
 100 CLS
 110 PRINT TAB 10;"Options"
 120 PRINT : PRINT : PRINT
 130 PRINT "Produce line graph..
..........1"
 140 PRINT
 150 PRINT "Produce bar graph...
..........2"
 160 PRINT
 170 PRINT "Produce pie chart...
..........3"
 180 PRINT
 190 PRINT "Edit data..........
..........4"
 200 PRINT
 210 PRINT "Save data..........
..........5"
 215 PRINT
 220 PRINT "Load data..........
..........6"
 230 PRINT : PRINT : PRINT :
 240 PRINT INVERSE 1; FLASH 1;"K
ey in desired option"
 250 PAUSE 0
 260 LET a$=INKEY$
 270 IF a$<"1" OR a$>"6" THEN GO
TO 250
 280 CLS
 290 GO SUB VAL a$*1000
 300 CLS
 310 GO TO 100
1000 INPUT "Colour ";c
1010 INK c
1020 LET max=0
1030 FOR a=1 TO n
1040 IF d(a)>max THEN LET max=d(
a)
1050 NEXT a
1060 LET vs=175/max
1070 LET hs=255/(n-1)
1080 FOR a=2 TO n
1090 DRAW hs,(d(a)-d(a-1))*vs
1100 NEXT a
1110 PAUSE 0
1115 IF INKEY$="c" THEN COPY
1120 INK 0
1130 RETURN
2000 INPUT "Colour ";c
2010 INK c
```

```
2020 LET max=0
2030 FOR a=1 TO n
2040 IF d(a)>max THEN LET max=d(
a)
2050 NEXT a
2060 LET vs=175/max
2070 LET hs=255/n
2080 FOR a=1 TO n
2085 FOR b=1 TO hs-1
2090 PLOT (a-1)*hs+b,0: DRAW 0,d
(a)*vs
2095 NEXT b
2100 NEXT a
2110 PAUSE 0
2120 IF INKEY$="c" THEN COPY
2130 INK 0
2140 RETURN
3000 INPUT "Colour ";c
3010 INK c
3020 CIRCLE 128,87,87
3030 LET sum=0
3040 FOR a=1 TO n
3050 LET sum=sum+d(a)
3060 NEXT a
3070 FOR a=1 TO n
3080 LET a(a)=(d(a)/sum)*360
3090 NEXT a
3100 LET rotate=0
3110 FOR a=1 TO n
3120 LET b=a(a)+rotate
3130 LET s=SIN (b*PI/180)
3140 LET c=COS (b*PI/180)
3150 PLOT 128,87
3160 DRAW s*87,c*87
3170 LET rotate=rotate+a(a)
3180 NEXT a
3190 PAUSE 0
3200 IF INKEY$="c" THEN COPY
3210 INK 0
3220 RETURN
4000 FOR a=1 TO n
4010 PRINT "Data item ";a;"=";d(
a)
4020 NEXT a
4030 INPUT "Edit which item ";i
4040 INPUT "Change to what ";d(i
)
4050 RETURN
5000 DIM n(1)
5010 LET n(1)=n
5020 SAVE "chart" DATA n()
5030 SAVE "chart" DATA d()
5040 RETURN
6000 DIM n(1)
6020 LOAD "chart" DATA n()
6030 LET n=n(1)
6040 DIM d(n)
6050 DIM a(n)
6060 LOAD "chart" DATA d()
6070 RETURN
```

```
***********************************************
   5 PAPER 0: BORDER 0: OVER 1:
CLS
  10 FOR a=151 TO 10000 STEP 100
  20 FOR b=1 TO 2
  25 LET n=1+INT (RND*6)
  30 PLOT 65,30
  40 DRAW INK n;120,120,PI*a
  50 BEEP .4,12
  60 NEXT b
  70 NEXT a
```

15

```
1 REM ..User Defined Graphics
generator for the 2068
10 DIM k(8,8)
20 FOR i=8 TO 15
30 PRINT AT i,12;"........"
40 NEXT i
50 LET x=0: LET y=0
55 GO SUB 500
60 INPUT "Pixel value   ";v
65 IF v<>0 AND v<>1 THEN GO TO
60
70 LET k(x+1,y+1)=v
80 PRINT AT x+8,y+12; INVERSE
v;" "
90 LET y=y+1
100 IF y=8 THEN LET y=0: LET x=
x+1
110 IF x=8 THEN LET x=0: LET y=
0: GO TO 200
120 GO TO 55
200 INPUT "Is this right?";q$
210 IF q$="" THEN GO TO 200
220 IF q$(1)="y" THEN GO TO 600
230 INPUT "Use arrow keys to mo
ve cursor";j$
235 GO SUB 500
240 IF INKEY$<>"" THEN GO TO 24
0
250 IF INKEY$="" THEN GO TO 250
260 LET i$=INKEY$
270 IF i$="0" OR i$="1" THEN LE
T k(x+1,y+1)=VAL i$: PRINT AT x+
8,y+12; INVERSE VAL i$;" ": GO T
O 200
275 PRINT AT x+8,y+12; INVERSE
k(x+1,y+1);" "
280 IF i$="5" THEN LET y=y-1+(y
=0)
290 IF i$="6" THEN LET x=x+1-(x
=7)
300 IF i$="7" THEN LET x=x-1+(x
=0)
310 IF i$="8" THEN LET y=y+1-(y
=7)
320 GO SUB 500
330 GO TO 240
500 PRINT AT x+8,y+12; FLASH 1;
INK 2;"x": RETURN
600 INPUT "Which letter?";f$
610 FOR n=1 TO 8
620 LET t=k(n,1)
630 FOR j=2 TO 8
640 LET t=2*t+k(n,j)
650 NEXT j
660 POKE USR f$+n-1,t
670 NEXT n
700 PRINT "This is what it look
s like: ";CHR$ (CODE f$+47)
710 PRINT ,,"Bytes:"
720 FOR n=1 TO 8
730 PRINT PEEK (USR f$+n-1);" "
;
740 NEXT n
```

```
1 REM There is nothing speci-
al about this program
other than the fact it
brings together all the
facts & figures perti-
nent to telescopes, bi-
noculars & cameras when
used for Astronomy.
This program is for the
T/S 2068 and Spectrum
computers. It should be
quite easy to translate
to other computers as
it is in BASIC.
2
3 REM Only two items have to
be INPUT-the aperture
of the instrument in
millimeters and the f/
ratio as it is called.
The latter is the ra-
tio of the diameter of
the lens(of the camera
for example)against
the focal length and
this in turn is the
distance from the lens
to the image the lens
forms.
6
7 REM *************************
8 REM TELESCOPE or CAMERA
ASTRO-performance
9 REM *************************
10 CLS : PRINT PAPER 5;"ASTROS
COPE or ASTROGRAPH(camera)"''
15 PLOT 0,167: DRAW 255,0
20 LET A$="NOT SUITABLE VISUAL
LY": LET T$="TELESCOPE THIS LENS
"
25 REM *input aperture+f/ratio
26
30 PRINT "APERTURE(MM) =",
40 INPUT A: IF A<6 THEN GO TO
40
50 PRINT INT A;" MM","FOCAL/RA
TIO =",: INPUT F
60 PRINT "F/";F
64
65 REM  formulae
66
70 LET FL= INT (A*F)
80 LET L=INT (A/6)
90 LET H=INT A*2
100 IF H>500 THEN LET H=500
110 LET V=1.9+INT (LN (A*A)*11)
/10
120 LET P=INT (206264/FL)
130 PRINT "F/LENGTH",FL;" MM"
134
135 REM max/min eyepiece powers
136
139 PAPER 6
140 PRINT INT (FL/L+.5);"MM FL
EP =", "x";L;" MIN POWER"
150 PRINT INT (FL/H*10)/10;"MM
FL EP =","x";H;" MAX POWER"
154
155 REM  flash scope comments
156
160 IF L>=H THEN PRINT FLASH 1;
T$( TO 10);A$
```

```
170 IF L<H AND A>=25 AND FL>=30
0 THEN PRINT FLASH 1;T$( TO 10);
A$(5 TO )
180 IF L<H AND A<25 OR FL<300 T
HEN PRINT FLASH 1;T$(11 TO );A$
184
185 REM     photo data
186
190 PAPER 5: PRINT ,,"PLATE SCA
LE",P;CHR$ 34;"ARC/MM"
200 PRINT "FIELD(35x24MM)",INT
(P)/100;CHR$ 130;" x ";INT (P*.6
66)/100;CHR$ 130
210 PRINT "RES PHOTO TRI-X",INT
(P*2)/100;CHR$ 34;"ARC"
220 PRINT "LIMIT PHOTO MAG","+"
;V+1.5
224
225 REM     visual data
226
230 PRINT ,,"RES(DAWES)VISUAL";
INT (11400/A)/100;CHR$ 34;"ARC"
240 PRINT "LIMIT VIS MAG","+";V
,,
244
245 REM     eyepiece data
246
250 FOR N=1 TO 5 STEP 1.5
260 PRINT PAPER 5;"EYEPIECE FL
=",5*N;"MM = x";INT (FL/5/N)
270 NEXT N: PAPER 7
275
280 PRINT #0;"Press 'z' to COPY
, 'r' to RUN": PAUSE 0
290 IF INKEY$="z" THEN COPY
300 RUN
9900
9990 SAVE "SCOPE" LINE 1
```

```
  1 REM Sketch Pad Program for
2068
 10 REM   Press Caps Shift and
         Arrow keys to move
         up,down,right & left
 14
 15 REM   D is for Pen Down
         U is for Pen Up
         E is for Erasor
 17
 20 REM   C,V,B & N give diagnol
         lines

         C=left/up
         V=left/down
         B=down/right
         N=up/right
 24
 25 REM   Number keys 0-6 set
         colours ******
 30
100 REM * SKETCHING PROGRAM *
110 PRINT "Arrow keys move pen
up/down left/right"
120 PRINT "D key puts pen down
for drawing"
130 PRINT "U key lifts pen for
moving"
140 PRINT "E key erases line"
150 PRINT "Number keys 0 to 6 s
et colour"
160 PRINT "Keys C,V,B and N giv
e diagnol    lines"
```

```
170 INPUT "Ready? (Y/N)";a$
180 IF a$<>"y" THEN GO TO 170
190 LET x=0: LET y=0: LET x1=0:
LET y1=0
200 LET s=0: LET p=0: INK 0: PA
PER 7
210 LET e=0: CLS : PLOT x,y
220 IF INKEY$="" THEN GO TO 220
230 LET a$=INKEY$
240 IF a$="q" OR a$="Q" THEN ST
OP
250 IF a$="u" OR a$="U" THEN LE
T p=0: GO TO 270
260 IF a$="d" OR a$="D" THEN LE
T p=1: LET e=0
270 IF a$="e" OR a$="E" THEN LE
T e=1
280 IF a$=CHR$ 8 THEN LET x=x-1
: GO TO 360
290 IF a$=CHR$ 9 THEN LET x=x+1
: GO TO 360
300 IF a$=CHR$ 10 THEN LET y=y-
1: GO TO 360
310 IF a$=CHR$ 11 THEN LET y=y+
1: GO TO 360
320 IF a$="c" OR a$="C" THEN LE
T x=x-1: LET y=y+1
330 IF a$="v" OR a$="V" THEN LE
T x=x-1: LET y=y-1
340 IF a$="b" OR a$="B" THEN LE
T x=x+1: LET y=y-1
350 IF a$="n" OR a$="N" THEN LE
T x=x+1: LET y=y+1
360 IF x>255 THEN LET x=x-256
370 IF x<0 THEN LET x=x+256
380 IF y>163 THEN LET y=y-164
390 IF y<0 THEN LET y=y+164
400 LET c=(CODE a$)-48
410 IF c>6 OR c<0 THEN GO TO 43
0
420 INK c
430 IF p=1 OR s=1 THEN GO TO 45
0
440 PLOT OVER 1;x1,y1: OVER 0
450 LET s=POINT (x,y)
460 IF e=1 THEN INVERSE 1
470 PLOT x,y
480 LET x1=x: LET y1=y
490 PRINT AT 0,0;"x = ";x;" y =
";y
500 INVERSE 0
510 GO TO 220
```

```
 10 REM reprinted from TIMELINE
Z July/Aug'87
 90 REM fast prime number gener
ator (max=approx 7621)
100 REM by Fred Templeton
110 INPUT "find primes to: ";n
120 IF n<2 THEN PRINT "must be
greater than 1": GO TO 110
130 CLS : DIM m(n)
140 PRINT "prime numbers from 2
 to ";n;":";'2
150 FOR c=3 TO n STEP 2
160 IF m(c) THEN GO TO 210
170 PRINT " ";c;
180 FOR l=c*3 TO n STEP 2*c
190 LET m(l)=1
200 NEXT l
210 NEXT c
220 GO TO 100
9999 CLEAR : SAVE "primes"
```

17

January 1988

```
Mon Tue Wed Thu Fri Sat Sun
                 1   2   3
 4   5   6   7   8   9  10
11  12  13  14  15  16  17
18  19  20  21  22  23  24
25  26  27  28  29  30  31
```

February 1988

```
Mon Tue Wed Thu Fri Sat Sun
 1   2   3   4   5   6   7
 8   9  10  11  12  13  14
15  16  17  18  19  20  21
22  23  24  25  26  27  28
29
```

March 1988

```
Mon Tue Wed Thu Fri Sat Sun
     1   2   3   4   5   6
 7   8   9  10  11  12  13
14  15  16  17  18  19  20
21  22  23  24  25  26  27
28  29  30  31
```

April 1988

```
Mon Tue Wed Thu Fri Sat Sun
             1   2   3
 4   5   6   7   8   9  10
11  12  13  14  15  16  17
18  19  20  21  22  23  24
25  26  27  28  29  30
```

May 1988

```
Mon Tue Wed Thu Fri Sat Sun
                         1
 2   3   4   5   6   7   8
 9  10  11  12  13  14  15
16  17  18  19  20  21  22
23  24  25  26  27  28  29
30  31
```

June 1988

```
Mon Tue Wed Thu Fri Sat Sun
         1   2   3   4   5
 6   7   8   9  10  11  12
13  14  15  16  17  18  19
20  21  22  23  24  25  26
27  28  29  30
```

July 1988

```
Mon Tue Wed Thu Fri Sat Sun
                 1   2   3
 4   5   6   7   8   9  10
11  12  13  14  15  16  17
18  19  20  21  22  23  24
25  26  27  28  29  30  31
```

August 1988

```
Mon Tue Wed Thu Fri Sat Sun
 1   2   3   4   5   6   7
 8   9  10  11  12  13  14
15  16  17  18  19  20  21
22  23  24  25  26  27  28
29  30  31
```

September 1988

```
Mon Tue Wed Thu Fri Sat Sun
             1   2   3   4
 5   6   7   8   9  10  11
12  13  14  15  16  17  18
19  20  21  22  23  24  25
26  27  28  29  30
```

October 1988

```
Mon Tue Wed Thu Fri Sat Sun
                 1   2
 3   4   5   6   7   8   9
10  11  12  13  14  15  16
17  18  19  20  21  22  23
24  25  26  27  28  29  30
31
```

November 1988

```
Mon Tue Wed Thu Fri Sat Sun
     1   2   3   4   5   6
 7   8   9  10  11  12  13
14  15  16  17  18  19  20
21  22  23  24  25  26  27
28  29  30
```

December 1988

```
Mon Tue Wed Thu Fri Sat Sun
         1   2   3   4
 5   6   7   8   9  10  11
12  13  14  15  16  17  18
19  20  21  22  23  24  25
26  27  28  29  30  31
```
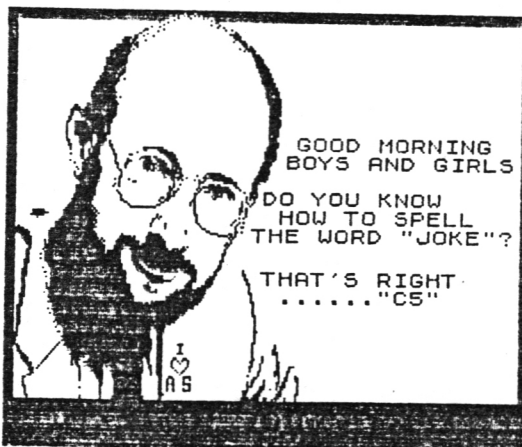
```
  10 INPUT "Year 19";y
  20 LET d=1
  30 FOR a=1901 TO 1900+y-1
  40 IF a/4=INT (a/4) AND a/1000
<>INT (a/1000) THEN LET d=d+366:
GO TO 60
  50 LET d=d+365
  60 NEXT a
  70 REM d is no of days since M
onday 1st January 1900
  80 LET e=d-7*INT (d/7)
 100 FOR m=1 TO 12
 110 READ m$,l
 115 IF y/4=INT (y/4) AND m$="Fe
bruary" THEN LET l=29
 120 PRINT TAB 10;m$;" ";1900+y
 121 LPRINT TAB 10;m$;" ";1900+y
 130 PRINT "_____"
 131 LPRINT "_____"
 140 PRINT "Mon Tue Wed Thu Fri
Sat Sun"
 141 LPRINT "Mon Tue Wed Thu Fri
Sat Sun"
 150 PRINT "_____"
 151 LPRINT "_____"
 160 FOR a=1 TO l
 165 POKE 23692,255
 166 IF INKEY$="h" THEN PAUSE 0
 170 PRINT TAB e*4;a;
 171 LPRINT TAB e*4;a;
 180 LET e=e+1
 190 IF e=7 THEN LET e=0
 200 NEXT a
 205 PRINT
 206 LPRINT
 210 PRINT "_____"
 211 LPRINT "_____"
 220 PRINT : PRINT : PRINT
 221 LPRINT : LPRINT : LPRINT
 230 NEXT m
 240 STOP
 250 DATA "January",31
 260 DATA "February",28
 270 DATA "March",31
 280 DATA "April",30
 290 DATA "May",31
 300 DATA "June",30
 310 DATA "July",31
 320 DATA "August",31
 330 DATA "September",30
 340 DATA "October",31
 350 DATA "November",30
 360 DATA "December",31
```
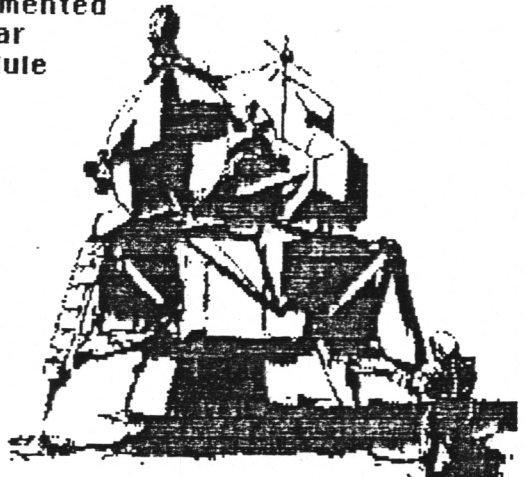

GOOD MORNING
BOYS AND GIRLS

DO YOU KNOW
HOW TO SPELL
THE WORD "JOKE"?

THAT'S RIGHT
......"C5"

I ♥ AS

dB

By Rich Tennant

****

```
   20 BORDER 0
   30 PAPER 0
   40 INK 7
   50 CLS
   60 PRINT "Type in a word up to
ten ""letters long-"
   70 INPUT A$
   80 CLS
   90 IF LEN A$>10 THEN GO TO 60
  100 PRINT INK 0;AT 0,0;A$
  110 PLOT 0,75
  120 DRAW 255,0
  130 LET D=LEN A$*8
  140 LET X=127-(D*3/2)
  150 FOR S=0 TO D*8
  160 FOR T=168 TO 175
  170 IF POINT (S,T)=1 THEN GO SU
B 240
  180 LET Y=Y+5
  190 NEXT T
  200 LET Y=0
  210 LET X=X+3
  220 NEXT S
  230 STOP
  240 FOR L=3 TO 1 STEP -1
  250 CIRCLE X,75+Y,L
  260 CIRCLE X,75-Y,L
  270 NEXT L
  280 RETURN
```

Augmented
Lunar
Module

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